Personalized Government Online Services with Recommendation Techniques

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Certificate of Authorship/Originality

I certify that the work in this thesis has not previously been submitted for a degree and nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that received in my research work and the preparation of the thesis has been acknowledged. In addition, I certify that all information sources and literatures used are indicated in the thesis.

Signature of Candidate Xuetao Guo

Date 08/06/2006

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Abstract

With the integration of information from different government agencies, a vast resource of information and services may be gathered in one portal. Many businesses have difficulty locating the required information and services. In such a situation of vast information overload, one of the difficulties facing governments is how to provide businesses with information specific to their needs, rather than an undifferentiated mass of information. One way to do this is through the development of personalized government online services. Indeed, the recent Accenture e-government study indicates that personalization techniques in e-government are beginning to emerge. However, existing personalization with recommendation techniques focuses on text document retrieval and e-commerce product recommendation domain. Personalization and recommendation applications in e-government have paid relatively little research attention.

Many mechanisms have been developed to deliver only relevant information to web users and prevent information overload. The most popular recent developments in the e-commerce domain are the user-preference based personalization and recommendation techniques. The existing techniques have a major drawback: they are difficulty to generate recommendation on one-and-only items, because most of them do not understand the item's semantic features and attributes. Therefore, this study aims to: (1) propose a novel approach, semantic product relevance model and its attendant personalized recommendation technique, to handle the one-and-only item recommendation problem; (2) develop a recommender system prototype, called Smart Trade Exhibition Finder, to tailor the relevant trade exhibition information to each particular business user, and to assist export business selecting the right trade exhibitions for market promotion. Smart Trade Exhibition Finder may reduce significantly the time, cost and risk faced by exporters in selecting, entering and developing international markets. In particular, the proposed approach can be used to overcome the drawback of existing recommendation techniques and enable recommender systems to work within a much wider range of problems which cannot currently be handled. The outcome of this study will solve the rating data lacking and new item problem, and significantly improve the performance compared to existing recommendation techniques.